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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,385	03/04/2002	Basil Naji	BALDS2.030AUS	4858

20995 7590 02/26/2004

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EXAMINER	
MAKI, STEVEN D	

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/090,385	NAJI ET AL.	
	Examiner	Art Unit	
	Steven D. Maki	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/06/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2) Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 9 and 10, there is no antecedent basis for "the reinforcing layer". Should claims 9 and 10 depend on claim 8 instead of claim 1?

3) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4) **Claims 1-8, 10-11, 13-19 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nozaki et al (JP 5-154816).**

Nozaki et al discloses a method of producing a fiber reinforced cement slab comprising:

supplying a first layer of cement slurry on a water permeable belt B from a first flow box 11, dewatering the slurry using suction box 11 and compressing the layer with a compression roll 50;

supplying a second layer of cement slurry on the first layer of cement slurry from a second flow box 20, dewatering the slurry using suction box 21 and compressing the layer using compression roll 51;

supplying a third layer of cement slurry on the second layer of cement slurry from a third flow box 30, dewatering the slurry using suction box 31 and compressing the layer with compression roll 52;

supplying a fourth layer of cement slurry on the third layer of cement slurry from a fourth flow box 40, dewatering the slurry and compressing with a compression roll 53 to thereby form a laminated sheet;

cutting the laminate; and

curing the laminate.

See abstract, figure 1 and machine translation. Nozaki et al teaches that the cement slurry may comprise for example 40-50% by weight cement, 40-50% by weight silica flour and 3-8% by weight pulp fiber. Nozaki et al specifically teaches that the slurry may comprise 46.5 % weight cement, 46.5% weight silica flour and 7% by weight pulp fiber.

As to claim 1, the claimed method is anticipated by Nozaki et al 's method of producing a fiber reinforced cement slab. The claimed "substrate layer" reads on one of the dewatered and compressed layers of cement slurry (e.g. the layer from flow box 10). The claimed "functional layer" reads on the next layer of cement slurry (e.g. the layer from flow box 20), which is dewatered through said one of the dewatered and compressed layers of cement slurry. The claimed dewatering step reads on the dewatering of said next layer of cement slurry. As to the slurry, the claimed "hydraulic binder" reads on the cement. The claimed "dewatering agent" reads on the silica flour. The silica flour in Nozaki et al 's slurry inherently performs the functions of maintaining

porosity and permitting dewatering. It is noted that (1) the silica flour is in a layer, which is dewatered and (2) dependent claim 16 describes "the dewatering agent is selected from the group consisting of fly ash, alumina trihydrate, silica flour, cenospheres and mixtures thereof".

As to claim 2, Nozaki et al teaches repeating the steps of supplying and dewatering the cement slurry until a desired number of layers (e.g. four) is formed.

As to claim 3, the claimed "one or more functional additives" reads on the pulp fiber in the slurry.

As to claims 4 and 5, Nozaki et al's "substrate layer" (e.g. the dewatered and compressed layer of cement slurry from flow box 10) is a fiber reinforced cement layer.

As to claims 6 and 7, Nozaki et al teaches repeating the steps of supplying and dewatering the cement slurry until a desired number of layers (e.g. four) is formed; the clamed substrate layer being one of those layers.

As to claims 8 and 10, the claimed reinforcing layer reads on one of the upper fiber reinforced cement layers of Nozaki et al.

As to claim 11, each of the outer layers of Nozaki et al's laminate is a fiber reinforced cement layer.

As to claim 13, the claimed "additives and/or fillers" read on the pulp fibers.

As to claims 14-16, the claimed dewatering agent reads on the silica flour.

As to claim 17, the laminate is cured in an autoclave. See paragraph 11 of machine translation.

As to claim 18, the product made by Nozaki et al's process is a fiber reinforced cement slab (cementitious building board).

As to claim 19, the thickness of the second layer (which may be described as a functional layer) is 0.25 cm - 0.12 cm = 0.13 cm (1.3 mm).

As to claim 21, Nozaki et al teaches using 40-50% cement (a hydraulic binder).

5) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6) **Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Vittone et al (US 4767491).**

Nozaki et al is discussed above. As to claim 9, it would have been obvious to one of ordinary skill in the art to incorporate a reinforcing net in Nozaki et al's process of making a multilayer cement fiber plate such that the "functional layer" is covered by the reinforcing net (a reinforcing layer comprising a netting) since Vittone et al, also directed to making a multilayer cement plate using dewatering, suggests supplying a reinforcing net on a cement slurry (which may contain natural fibers) during the process of making the multilayer cement plate so that the resulting cement plate has high resistance to bending stresses, high tensile strength, high impact resistance and high fatigue strength.

7) **Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Cross (US 4379729) and Japan '541 (JP 8-67541).**

Nozaki et al is discussed above. As to claim 12, it would have been obvious to one of ordinary skill in the art to vary the amount of fibers in the layers of Nozaki et al's multilayer cement plate since Cross and Japan '541 suggest forming a multilayer cement fiber sheet having layers of different composition wherein (1) Cross suggests using more fibers in the outer layers than the middle layer in order to reduce weight and (2) Japan '541, like Nozaki et al teaches using dewatering to form the multilayer sheet.

8) **Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Watanabe et al (JP 2000-302522).**

Nozaki et al is discussed above. As to claim 20, it would have been obvious to one of ordinary skill in the art to use white cement as the cement in Nozaki et al's process of making a cement fiber plate since Watanabe et al teaches that Portland cement is a suitable cement to be used in the production of a fiber reinforced cement board; white Portland cement being taken as a well known type of Portland cement per se.

9) **Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Watanabe et al and optionally Takai et al (US 5338357).**

Nozaki et al is discussed above. As to claim 22, it would have been obvious to one of ordinary skill in the art to include fly ash in the cement slurry of Nozaki et al since (1) Watanabe et al, also directed to making a fiber reinforced cement board, suggests including fly ash in the cement slurry so that the resulting board has excellent freeze damage resistance and good strength and dimensional stability and optionally (2) one of ordinary skill in the art would readily appreciate that use of fly ash would permit the

dewatering of Nozaki et al's layers since fly ash is known as being an additive that "improves the drainage behavior of the suspensions on the draining machines" as evidenced by Takai et al (col. 6 lines 12-20)

10) **Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Watanabe et al and optionally Takai et al (US 5338357) as applied above and further in view of Japan '074 (JP 60-191074).**

As to claim 23, it would have been obvious to one of ordinary skill in the art to one of ordinary skill in the art to use a first fly ash component having a particle diameter of 1-100 microns and a second fly ash component having a maximum particle size of around 10 microns as the fly ash for the cement fiber plate since Japan '074 suggests improving the mechanical properties of cement by using larger size particles (e.g. fly ash) having more than 90% of the particles having a diameter of 10-100 microns and smaller particles (e.g. fly ash) having 90% of the particles having a size of less than 10 microns (abstract).

11) **Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Watanabe et al and optionally Takai et al (US 5338357) as applied above and further in view of Liskowitz et al (US 5853475).**

As to claim 24, it would have been obvious to one of ordinary skill in the art to include fly ash particles having a size greater than 100 microns in the fly ash for the cement fiber plate since Liskowitz et al, directed to using fly ash in cement, shows that known fly ash (e.g. dry bottom fly ash) includes a minor amount of particles having a size greater than 100 microns (see for example figure 1A).

12) **Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Japan '541.**

Nozaki et al is discussed above. As to claim 25, it would have been obvious to include additives in the "functional layer" of Nozaki et al since Japan '541 suggests including additives (e.g. pigment) in cement slurry used in layers which are sequentially dewatered to form a multilayer cement fiber board. The claimed treating of the substrate layer naturally flows from Nozaki et al's and Japan '541's teaching to dewater a next layer through the previous layer.

13) **Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nozaki et al in view of Japan '211 (JP 60-135211).**

Nozaki et al is discussed above. As to claim 26, it would have been obvious to supply Nozaki et al's cement slurry by means of splattering since Japan '211, also directed to making a fiber cement sheet using dewatering, suggests using a "splattering means" (spreading device having a spreading tank 4, brush roll 5 and mixing roll 6) to uniformly spread a cement slurry 1.

Remarks

14) Delcoigne et al (US 4383960) is cited of interest for disclosing adding a reinforcing material (e.g. fabric) prior to supplying and dewatering a slurry (see 14 in figure 1).

Beijen et al is cited of interest for disclosing adding a fiber network 6 prior to dewatering a slurry in a process of making a multilayer cement board (see figure 1).

The remaining references are of interest.

15) No claim is allowed.

16) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
February 13, 2004

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2-13-04